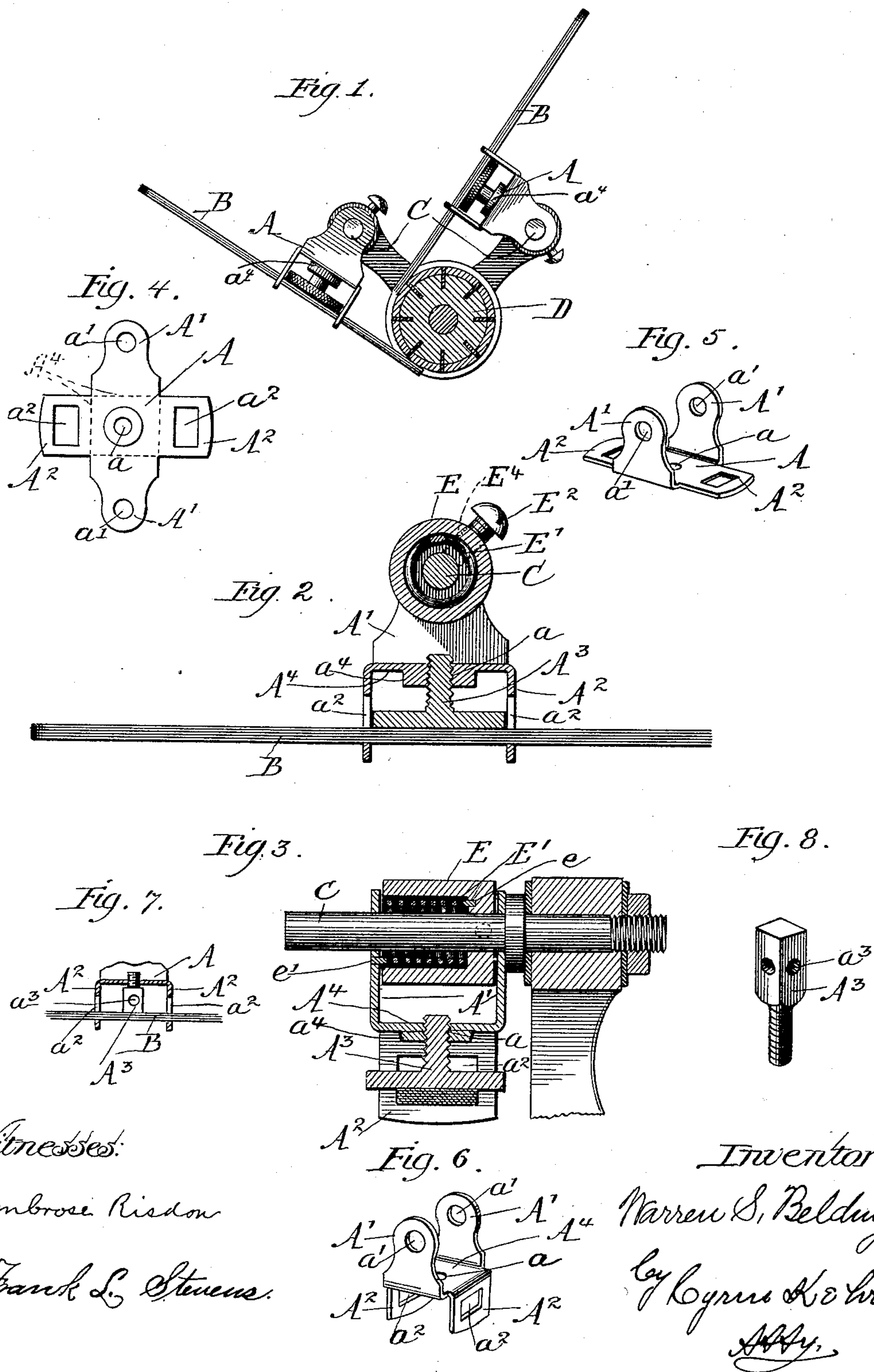


(No Model.)

W. S. BELDING.
BRUSH HOLDER FOR ELECTRICAL MACHINES.

No. 433,390.

Patented July 29, 189



Witnesses:

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UNITED STATES PATENT OFFICE.

WARREN S. BELDING, OF ENGLEWOOD, ILLINOIS.

BRUSH-HOLDER FOR ELECTRICAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 433,390, dated July 29, 1890.

Application filed July 5, 1889. Serial No. 316,520. (No model.)

To all whom it may concern:

Be it known that I, WARREN S. BELDING, a citizen of the United States, residing at Englewood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brush-Holders for Electrical Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

15 This invention relates to brush-holders for electric motors and dynamos, which brush-holders hold the brushes adjustably and by a yielding pressure upon the commutator of the electric machine.

20 The object of the invention is to provide a holder, the parts of which are extremely simple, and which may be rapidly and cheaply manufactured.

In the accompanying drawings, Figure 1 is an elevation of a pair of my improved brush-holders applied to a commutator. Fig. 2 is a sectional view taken in the direction of the brush. Fig. 3 is a sectional view taken transversely to the brush. Fig. 4 shows a blank from which the body of the holder is formed. Fig. 5 shows said blank with the lobes turned up to form the bearings for the brush-arm. Fig. 6 shows the intermediate lobes of the blank turned down to form ways for the brush. Figs. 7 and 8 show modifications.

Referring to said drawings, A is the body of the holder.

B is the brush.

C is the arm supporting the brush-holder.

40 D is the commutator.

The blank from which the body A is made may be stamped of sheet metal having the opposite rounded lobes A' A' and the nearly-square lobes A² A², as shown in the drawings. The lobes A' A' each have a round hole a', of the diameter of the arm C, and each of the lobes A² has a slot or other suitable opening a². At the center of the blank there is a round hole a, of suitable size to receive the screw mentioned below. This blank may be stamped very rapidly and cheaply in dies

formed for the purpose. Another machine turns the lobes A' A' upward at right angles to the blank, so that the arm C may be extended through the holes a', as shown by the drawings. The same or another machine bends the lobes A² downward perpendicularly to the plane of the blank. Thus the slots a² are brought into line facing each other, so that the brush B may be extended through them. To fasten the brush in said slots, a broad-headed screw A³ is seated in the hole a, with the head extending upward against the brush B. Retracting the screw from its seat forces the screw against the lower side of the brush and presses the latter against the web forming the lower boundary of the slots a². Turning the screw in its seat draws the head of the screw away from the brush B and releases the latter. The head of the screw should be made broader than the width of the brush, in order that the edges of the head may extend beyond each edge of the brush, so that it may be grasped by the thumb and finger, and in order that the head may press against the brush close to the lobes A', so that the brush will not be bent. For convenience, the edge of the screw-head should be milled.

For large machines the screw A³ may be in the form of a cylindric or octagonal post (see Figs. 7 and 8) arranged to have its upper end driven against the lower side of the brush by retracting the screw. Holes a³ may extend into or through such screw to receive a pin for turning the screw. If such screw is made octagonal, a wrench or other suitable tool may be used to turn the screw.

In turning up the blank to form the body, as above described, a square face A⁴ is left around the hole a and between the lobes A' and A². If the blank is stamped of relatively thin sheet metal, as will usually be desirable, the metal around the hole a is too thin to make a good nut for the screw A³. This I remedy by applying a flat piece of metal a⁴ upon the face A⁴ around said holes by means of solder or otherwise. The nut is then formed in the total thickness of metal.

The body A may obviously be cast in a mold, and this course may be desirable for extra large brushes.

E is a barrel surrounding the arm C between the lobes A' A'. Within said barrel, and also surrounding said arm, is a spiral spring E', one end of which spring is secured in the wall of the wall-barrel at one end thereof, as at *e*. The opposite end of this spring is secured in the adjacent lobe A', as at *e'*. Thus the brush-holder is given a yielding or elastic connection to said barrel, and it follows that if the barrel is secured rigidly to the arm C the brush-holder will have an elastic connection with said arm. The attachment of said barrel to the arm C is effected by means of a set-screw E², extending through the threaded hole E⁴ at any suitable point on the barrel and arranged to be forced against the arm C. By means of this set-screw attachment the brush may be adjusted radially and laterally upon the arm C, so that the brush may be made to bear upon the commutator with different degrees of force, and so that the brush may be shifted longitudinally upon the commutator.

For the sake of avoiding confusion it is to be stated that the language of the appended claims regards the holder turned so that the brush is uppermost, as the right-hand brush in Fig. 1.

I claim as my invention—

1. In a brush-holder for electric motors and dynamos, the body A, seated upon the supporting-arm C and having the upward-directed slotted lobes A² to receive the brush B, and a screw seated in the body A below the space to be occupied by the brush, so that when the brush is inserted in said lobes the retraction of the screw from its seat will drive said screw upward against the brush and bind the latter in the slots of said lobes, substantially as shown and described.

2. In a brush-holder for electric motors and dynamos, the body A, having downward-directed lobes A', surrounding the supporting-arm C, and having upward-directed slotted lobes A² to receive the brush B, and a screw seated in the body A below the space to be occupied by the brush, so that when the brush is inserted into said lobes the retraction of the screw from its seat will drive said screw upward against the brush and bind the latter in the slots of said lobes, substantially as shown and described.

3. In a brush-holder for electric motors and dynamos, the body A, of sheet metal, seated upon the supporting-arm C, and having the upward-directed slotted lobes A² to receive the brush B, and a screw seated in the body

A below the space to be occupied by the brush, so that when the brush is inserted into said lobes the retraction of the screw from its seat will drive said screw upward against the brush and bind the latter in the slots of said lobes, substantially as shown and described.

4. In a brush-holder for electric motors and dynamos, the body A, of sheet metal, having downward-directed lobes A', surrounding the supporting-arm C, and having the upward-directed slotted lobes A² to receive the brush B, and a screw seated in the body A below the space to be occupied by the brush, so that when the brush is inserted into said lobes the retraction of the screw from its seat will drive said screw upward against the brush and bind the latter in the slots of said lobes, substantially as shown and described.

5. In a brush-holder for electric motors and dynamos, a body A, having lobes A', directed downward to surround the supporting-arm C and the upward-directed slotted lobes A², a face A⁴, a piece of metal *a*⁴, applied to said face, and a screw A³, extending through said piece of metal *a*⁴ and the face A⁴, with its head directed upward toward the space to be occupied by the brush, substantially as shown and described.

6. In a brush-holder for electric motors and dynamos, the body A, secured by a yielding and adjustable connection upon the supporting-arm C, and having the upward-directed slotted lobes A² and the face A⁴, and the screw set upon said face A⁴ and extending upward toward the space to be occupied by the brush, substantially as shown and described.

7. In a brush-holder, the combination, with the body A, having the lobes A² to receive the brush, and the screw A³ to bear against the brush, and the lobes A', directed downward to surround the supporting-arm C, of a barrel surrounding said arm between said lobes A', a spiral spring also surrounding said supporting-arm, one end of said spiral spring being attached to the adjacent lobe A', and the opposite end of said spring being attached to the adjacent end of said barrel, and a set-screw threaded through said barrel in any desired position upon the supporting-arm, substantially as shown and described.

In testimony whereof I affix my signature, in presence of two witnesses, this 14th day of June, 1889.

WARREN S. BELDING.

Witnesses:

AMBROSE RISDON,
CYRUS KEHR.